

REMARKS

In response to the Notice of Non-Compliant Amendment, Applicants submit the Remarks submitted with the Amendment filed October 25, 2007 supplemented with additional arguments responsive to the Non-Compliant Amendment.

Claims 31, 35-48, and 50-53 are currently pending in the present application, including independent claim 31. Independent claim 31 is directed to a substrate for reducing odor. The substrate is porous and comprises a nonwoven, woven, or paper web. The substrate contains colloidal silica nanoparticles configured to adsorb one or more odorous compounds. The silica nanoparticles have an average size of from about 1 to about 50 nanometers and a surface area of from about 50 to about 1000 square meters per gram. Further, the silica nanoparticles are relatively nonporous and thus have a pore volume of less than about 0.4 milliliters per gram. Without intending to be limited by theory, the present inventors believe that the solid nature, i.e., low pore volume, of the colloidal nanoparticles may enhance the uniformity and stability of the nanoparticles, without sacrificing its odor adsorption characteristics.

In the Office Action, independent claim 31 was rejected under 35 U.S.C. § 102(b) as being anticipated by EP1188854 to Honda, et al. Honda, et al. is directed to a photocatalyst; specifically, a complex oxide containing titanium and silicon. Applicants respectfully submit, however, that Honda, et al. fails to disclose various aspects of independent claim 31. Particularly, in the Amendment dated May 29, 2007, Applicants amended independent claim 31 to include the limitation that the silica nanoparticles are “configured to adsorb one or more odorous compounds.” The present Office Action did not address the ramifications of this Amendment.

Honda, et al. discloses that the invention's primary function is to decompose malodorous compounds rather than adsorb them:

There are also known deodorants which utilize physical adsorption, such as active carbon and silica. However, with these, the malodorous compounds are adsorbed and not decomposed, so they do not fundamentally resolve the situation. Ideally, it is necessary that malodorous compounds be completely decomposed to odorless components. pg. 2, ¶ [0005], ll. 30-32.

Honda, et al. gives further reasons why the invention is not configured to adsorb odorous compounds:

In the case of fibre structures which have been subjected to such deodorant processing, the adsorbed components may themselves give rise to a bad smell or the malodorous components may be changed by decomposition into other components which themselves produce a strange smell. pg. 2, ¶ [0007], ll. 44-46.

Honda, et al. utilizes a photocatalyst in order to decompose odorous compounds rather than being configured to adsorb them as claim 31 requires.

Furthermore, claim 31 includes the limitation that the substrate contains colloidal silica nanoparticles. Honda, et al. does not disclose the use of silica nanoparticles. Specifically, Honda, et al. utilizes a complex oxide of silica and titanium yielding characteristics wholly different than the claimed colloidal silica nanoparticles. For instance Honda, et al. states:

In other words, the complex oxides of titanium and silicon are not simple mixtures of titanium oxide and silicon oxide, but are recognized as exhibiting characteristic properties due to the fact that the titanium and silicon form a so-called binary oxide. Furthermore, the results of X-ray diffraction analysis have shown that this composite oxide has a non-crystalline or essentially non-crystalline microstructure. pg. 3, ¶ [0016], ll. 42-46.

As such, Honda, et al. cannot be said to anticipate a substrate containing colloidal silica nanoparticles.

Additionally, as the Office Action correctly indicates, Honda, et al. does not disclose the limitation that the silica nanoparticles are relatively nonporous and thus have a pore volume of less than about 0.4 milliliters per gram. However, the Office Action found this claimed feature to be inherently disclosed in Honda, et al. Applicants respectfully disagree. As discussed above, Honda, et al. specifically discloses that the complex oxide of titanium and silicon exhibits properties wholly different from a simple mixture of silicon and titanium particles. Thus, Applicants submit that simply because the complex titanium-silicon oxide of Honda, et al. may yield particles of similar size and surface area, it is improper to conclude that these particles inherently disclose a property (i.e., pore volume) that is the same as the claimed silica nanoparticles.

Thus, for at least the reasons set forth above, Applicants respectfully submit that independent claim 31 patentably defines over Honda, et al. Further, at least for the reasons indicated above relating to independent claim 31, the corresponding dependent claims also patentably define over the references cited. However, the patentability of the dependent claims certainly does not hinge on the patentability of the independent claim.

Additionally, dependent claim 43 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Honda, et al. For at least the reasons indicated above relating to independent claim 31, Applicants submit that dependent claim 43 patentably defines over Honda, et al.

Additionally, dependent claims 44, 45, 46, 51, and 52 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Honda, et al. in view of WO 03/025067 to Beaverton. Applicants submit that Beaverton does not remedy the limitations of Honda, et al. as discussed above relating to independent claim 31. Thus, for at least the reasons indicated above relating to independent claim 31, Applicants submit that dependent claims 44, 45, 46, 51, and 52 patentably define over Honda, et al. in view of Beaverton.

Additionally, dependent claim 47 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Honda, et al. in view of U.S. 5,762,643 to Ray, et al. Applicants submit that Ray, et al. does not remedy the limitations of Honda, et al. as discussed above relating to independent claim 31. Thus, for at least the reasons indicated above relating to independent claim 31, Applicants submit that dependent claim 47 patentably defines over Honda, et al. in view of Ray, et al..

Additionally, previous dependent claim 49 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Honda, et al. in view of U.S. Patent Application Publication 2002/0006425 to Takaoa, et al. Applicants have cancelled previous dependent claim 49.

In addition to the rejection noted above, various claims were also provisionally rejected under the judicially created doctrine of obvious-type double patenting in view of pending U.S. Application Serial No. 10/686,938. Additionally, claims 31, 43, 49, and 50 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-35 of U.S. Patent No. 7,141,518. To the extent

necessary, Applicants agree to submit terminal disclaimers for both references at such time that the application is otherwise in condition for allowance.

Finally, dependent claim 49 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter. Additionally, claim 49 was objected to under 37 CFR 1.75(c) for failing to further limit the subject matter of claim 31. Applicants have cancelled previous dependent claim 49.

However, Applicants submit that new dependent claim 53 is in compliance with 35 U.S.C. § 112, second paragraph. Dependent claim 53 limits the silica nanoparticles to consisting essentially of only silica or alumina-coated silica. Applicants submit that one of ordinary skill in the art would understand the ramifications of the “consisting essentially of silica or alumina-coated silica” limitation. For instance, the specification discloses that various Snowtex® products from Nissan Chemical may be understood as consisting essentially of silica (e.g., Snowtex-C, Snowtex-O, Snowtex-PS, Snowtex-OXS) or alumina-coated silica (Snowtex-AK). Spec., pg. 6, ll. 4-9.

Applicants respectfully submit that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. Examiner Silverman is invited and encouraged to telephone the undersigned, however, should any issues remain after consideration of this Response.

Please charge any additional fees required by this Response to Deposit Account No. 04-1403.

Appl. No. 10/686,933
Supplemental Response dated Dec. 10, 2007
Reply to Notice of Non-Compliant Amendment of Nov. 9, 2007

Respectfully requested,

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